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GB 2284014 A GB 2278398 A US 5074075 A

(58) Field of Search

UK CL (Edition P) E2F FSG FSN

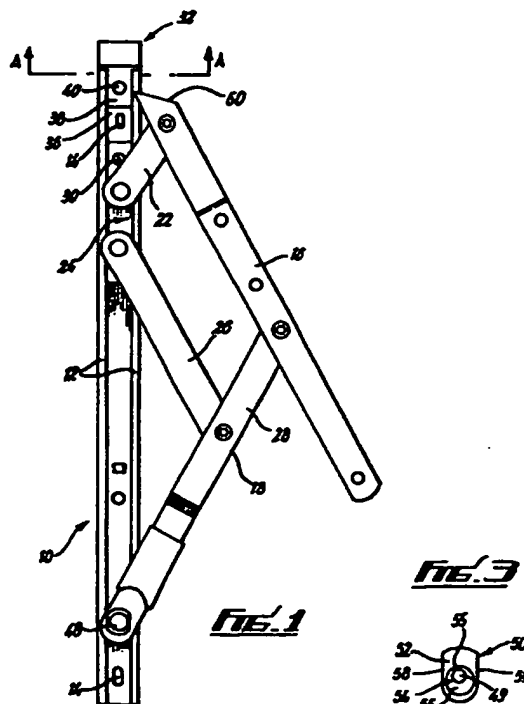
INT CL<sup>6</sup> E05C 17/32 17/34, E05D 15/28 15/30 15/32  
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(54) Abstract Title

**Window stay with cam adjuster to compensate for window seal wear**

(57) A window friction stay has a track 10 to be fixed to a window frame and a member 16 of a link arrangement to be attached to the window sash. The link arrangement is connected to a slider 24 in the track and has a member 18 pivotally mounted on the track. An intermediate component has a head part and a cam part locating closely within a hole in the pivot member 18, the axis of the cam part being offset in relation to the axis of a through opening in a component 50. A fixing screw 48 extends through the opening in the component, through the hole in the pivot member, and through a hole in the track to engage in a securing nut. Manual rotation of the component by way of the head part thereof obliges the pivot member to move further towards an end member 32 in the track, leading to increased pressure on an end face 60 on the member against a cam surface of the end member, and therefore additional pressure of the window against the window frame to improve sealing.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

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**Improvements in or Relating to Window Supports**

This invention is concerned with apparatus for supporting a component for movement between an open and a closed position in a fixture opening, and is particularly concerned with window support apparatus wherein the window is pivotable about either a vertical or a horizontal axis and the axis of pivoting of the window moves away from the window frame, so that when the window is open, both sides thereof are accessible from one side of the window frame.

In the closed position of the window in the window frame, the window engages against one seal on the window frame and also provides itself a further seal for engagement against the window frame. The apparatus in question conventionally comprises a link arrangement having a first link which mounts the window and which is pivotally mounted on a track mounted on the window frame. Incorrect fitting of the link arrangement can have the effect of making the seals ineffective. Also, the seals can become ineffective through wear.

According to the present invention there is provided apparatus for supporting a component for movement between an open and a closed position in a fixture opening, the apparatus comprising a link arrangement having a first member for mounting the component, a second member for pivotally mounting the first member on a third member, the latter being adapted to be secured to the fixture opening and comprising a track, and a fourth member which pivotally mounts the first member on means which is slidably located in the track, and means at the pivot location of the second member on the track for adjusting the spacing between a profiled end means on the track and the pivot location, the adjusting means so engaging with the second member that, on movement of the component into the closed position, adjustment of the adjusting means is able to control movement of the first member towards the profiled end means, and thereby control movement of the first member across the track together with movement of the component into the fixture opening.

Preferably the second member is pivotally mounted on the track by means of a releasable fixing which extends through an opening in the second member and into the track, the second member opening being enlarged relative to the fixing, and the adjusting means comprises an element having a head part adapted to overlie the second member opening, a cam part locating in the opening, and a through aperture for receiving the fixing. The cam part may be circular with an axis offset relative to the through opening therein, rotation of the cam part being effected by manual rotation of the head part. To facilitate manual rotation, the head part may have a pair of opposed planar edges for engagement by a suitable tool.

Preferably also the track at the pivot location of the second member thereon is upwardly recessed to define an upstanding boss, the fixing being in the form of a screw and a locking nut for the screw being locatable from below the track in the recess.

Embodiments of the present invention will now be described by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a top plan view of a window support apparatus shown in partly open position;

Fig. 2 is a cross-section on A-A of Fig. 1; and

Fig. 3 is an underneath view of an element of the apparatus of Fig. 1.

Referring to the drawings, a window support apparatus in the form of a friction stay comprises an open topped track 10 having inturned upper walls 12, the track 10 being fixed on a lower horizontal part of a window frame (not shown) by means of any suitable fixing devices engaged through apertures 14 in the base of the track 10. A further track (not shown) is inverted and secured to a horizontal upper member of the window frame.

The window sash (not shown) is fixed at opposed edges to a respective elongate member 16 forming part of a link arrangement. The member 16, at a location intermediate of its ends, is pivotally mounted on one end of an

elongate pivot member 18, the other end of which is pivotally mounted on the track 10 towards one end thereof. Towards one end of the support member 16 the latter is pivotally mounted on one end of a link 22, the other end of the latter being pivotally mounted on a slider 24 which is located in the track 10. The slider 24 also pivotally mounts one end of a further link 26, the other end of the link 26 being pivotally mounted on the pivot member 18. The latter is stepped along its length to provide a raised section 28 on which the link 26 is mounted, so as to provide clearance for the link 26 in the closed position.

The slider 24 has an internally threaded hole to receive a conventional friction screw 30, by means of which the slider 24 and thus the stay remains by friction in any position to which the slider 24 is moved by opening of the window.

At the other end of the track 10, the latter is closed by a member 32 which has a mounting section overlying an end part of the base of the track 10 below the walls 12. The member 32 is formed as a composite of metal and plastics with the mounting section having a plastics part 36 presenting a through opening aligned with one of the apertures 14 in the base of the track 10, and an overlying metal part 38 extending only part way along the length of the mounting part 34. A fixing hole 40 is formed through the mounting part 34 at the metal part 38, the underlying plastics part 36, and through the base of the track 10.

The metal part 38 is integrally formed with a part 42 (Fig. 2) upstanding from the track 10 to define an arcuate cam surface 44 for a purpose hereinafter described. The member 32 also provides an upstanding plastics part located behind the part 42, integrally formed with the plastics part 36 and, above the cam surface 44 providing a cap 46 extending thereover.

At the pivot location for the pivot member 18 on the track 10, the base of the latter has a hole pierced therethrough and a boss thereafter formed to the upper side of the base by extrusion of the material at the location of the hole.

The pivot member 18 is formed with a through hole at the end to be mounted on the track 10, the diameter of the hole being greater than the diameter of the hole formed in the boss in the track 10. A fixing screw 48 extends through a through opening 49 in an intermediate component 50 (Fig. 3), through the hole in the pivot member 18 and through the hole in the boss in the track 10 to engage in a securing nut (not shown) located from underneath the track 10 in the spaced defined by the boss. The intermediate component 50 is formed with a head part 52 providing a countersunk upper face for receiving the head of the screw 48, and a cam part 54 on the lower face of the head part 52. The cam part 54 is circular and of a diameter to locate closely within the hole in the pivot member 18, but the axis of the cam part 54 is offset in relation to the axis of the through opening 49 in the intermediate component 50, to provide a relatively small area 55 and a relatively large area 56 on respective sides of the opening 49. The head part 52 is formed with a pair of opposed planar edges 58 to facilitate engagement by a suitable tool for rotating the component 50.

In use, the support member may be swung from the position shown in Fig. 1 to a closed position wherein the support member 16 overlies the pivot member 18 and the links 22, 26, the latter in turn overlying the track 10. It will be appreciated that in the closed position, the window supported by the link arrangement is also closed. Conventionally, one part of the window closes against a seal on a part of the window frame, while another part of the window provides a seal which also closes on another part of the window frame. Assuming the friction stay is correctly positioned on the window and window frame, and that the window seals are fully effective, the intermediate component 50 can be positioned with the large area 56 of the cam part 54 extending in a direction away from the end member 32. While the support member 16 is swung to its closed position, an angled end face 60 on the support member 16 enters the end member 32 and interacts with the upstanding cam surface 44 to correctly position the window against the window frame.

However, in the event of inaccurate fitting of the window stay, or wear of

the window seals, the sealing of the window may be, or become, less effective than is desired. In order to move the window into closer engagement with the window frame, the screw 48 may be loosened to enable rotation of the intermediate component 50 so that the large area 56 of the cam part 54 is rotated to extend towards the end member 32. Rotation of the cam part 54 in the opening in the pivot member 18 obliges the latter, on closure of the window, to move further towards the end member 32 and thereby force the slider 24 and the support member 16 to move further towards the end member 32. The consequent increased pressure of the end face 60 against the upstanding cam surface 44 causes additional lateral movement of the support member 16 in the direction of closing, and therefore additional pressure of the window against the window frame to improve sealing. It will be appreciated that the intermediate component 50 can be adjusted to any position between its two extreme positions and thereby provides a considerable amount of adjustment.

There is thus provided an effective arrangement to compensate for inaccurate fitting or wear of window seals, which is relatively simple in manufacture and operation.

Various modifications may be made without departing from the invention. For example, the invention is not restricted to the window stay as specifically described and shown.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

**CLAIMS:-**

1. Apparatus for supporting a component for movement between an open and a closed position in a fixture opening, the apparatus comprising a link arrangement having a first member for mounting the component, a second member for pivotally mounting the first member on a third member, the latter being adapted to be secured to the fixture opening and comprising a track, and a fourth member which pivotally mounts the first member on means which is slidably located in the track, and means at the pivot location of the second member on the track for adjusting the spacing between a profiled end means on the track and the pivot location, the adjusting means so engaging with the second member that, on movement of the component into the closed position, adjustment of the adjusting means is able to control movement of the first member towards the profiled end means, and thereby control movement of the first member across the track together with movement of the component into the fixture opening.
2. Apparatus according to claim 1, wherein the second member is pivotally mounted on the track by means of a releasable fixing which extends through an opening in the second member and into the track, the second member opening being enlarged relative to the fixing, and the adjusting means comprises an element having a head part adapted to overlie the second member opening, a cam part locating in the opening, and a through aperture for receiving the fixing.
3. Apparatus according to claim 2, wherein the cam part is circular with an axis offset relative to the through opening therein, rotation of the cam part being effected by manual rotation of the head part.
4. Apparatus according to claim 2 or 3, wherein the head part has a pair of opposed planar edges for engagement by a suitable tool.
5. Apparatus according to any of the previous claims, wherein the track at



the pivot location of the second member thereon is upwardly recessed to define an upstanding boss.

6. Apparatus according to claim 5, when dependent on any of claims 2 to 4, wherein the fixing is in the form of a screw and a locking nut for the screw is locatable from below the track in the recess.

7. Apparatus for supporting a component for movement between an open and a closed position in a fixture opening, substantially as hereinbefore described with reference to the accompanying drawings.

8. Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.



Application No: GB 9709753.9  
Claims searched: 1-7

Examiner: Paul Foot  
Date of search: 31 July 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): E2F: FSG, FSN

Int CI (Ed.6): E05C: 17/32, 17/34

E05D: 15/28, 15/30, 15/32, 15/40, 15/42, 15/44, 15/46

Other: Online: WPI

**Documents considered to be relevant:**

| Category | Identity of document and relevant passage                   | Relevant to claims |
|----------|---|--------------------|
| X, Y     | GB2284014A (DGS HARDWARE) see esp. page 9, bottom paragraph | X: 1<br>Y: 2, 3, 5 |
| X, Y     | GB2278398A (DGS HARDWARE) Whole document relevant           | X: 1<br>Y: 2, 3, 5 |
| Y        | US5074075A (LA SEE) see cam arrangement 27                  | Y: 2, 3, 5         |

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.  
P Document published on or after the declared priority date but before the filing date of this invention.  
E Patent document published on or after, but with priority date earlier than, the filing date of this application.

**DERWENT-ACC-NO: 1998-560207**

**DERWENT-WEEK: 199848**

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**TITLE: Window stay - has a link arrangement comprising a pivot bar and a support bar pivotally interconnected and pivotally mounted on a track, the pivot bar is provided with an adjustable component**

**INVENTOR: LANAWAY, R P**

**PATENT-ASSIGNEE: DGS HARDWARE LTD[DGSHN]**

**PRIORITY-DATA: 1997GB-0009753 (May 15, 1997)**

**PATENT-FAMILY:**

| <b>PUB-NO</b>       | <b>PUB-DATE</b>          | <b>LANGUAGE</b> | <b>PAGES</b> | <b>MAIN-IPC</b> |
|---------------------|--------------------------|-----------------|--------------|-----------------|
| <b>GB 2325273 A</b> | <b>November 18, 1998</b> | <b>N/A</b>      | <b>010</b>   | <b>E05D</b>     |
| <b>015/30</b>       |                          |                 |              |                 |

**APPLICATION-DATA:**

| <b>PUB-NO</b>      | <b>APPL-DESCRIPTOR</b> | <b>APPL-NO</b>        | <b>APPL-DATE</b>    |
|--------------------|------------------------|-----------------------|---------------------|
| <b>GB 2325273A</b> | <b>N/A</b>             | <b>1997GB-0009753</b> | <b>May 15, 1997</b> |

**INT-CL (IPC): E05D015/30**

**ABSTRACTED-PUB-NO: GB 2325273A**

**BASIC-ABSTRACT:**

**The stay includes an open topped track (10) having inturned upper walls (12).**

**The track is fixable on part of a window frame by any suitable fixing device engaged through apertures (14) in its base. The stay further includes a link arrangement consisting an elongate support bar (16) attached to a window**

**sash.**

**An elongate pivot bar (18) pivotally mounted on the track towards one end is**

**pivotally connected to the support bar at a location intermediate of its ends.**

**The other end of the support bar is pivotally connected to a link (22) which is**

**pivotally mounted on a slider (24) located in the track. The slider also mounts pivotally one end of another link (26) whose other end is pivotally mounted on the pivot bar (18). The slider has an internally threaded hole to receive a conventional friction screw (30).**

**The pivot bar (18) is fixed to the track by a fixing screw (48) which extends through an opening (49) in an adjustable intermediate component (50). The component is formed with a head part (52) providing a countersunk upper face**

**for receiving the screw head and a circular cam part (54) with an axis offset**

**relative to the through opening (49) on the lower face of the head part.**

**ADVANTAGE - It is relatively simple in manufacture and operation and provides an effective compensation for inaccurate fitting or wear of window seals.**

**CHOSEN-DRAWING: Dwg.1,3/3**

**TITLE-TERMS: WINDOW STAY LINK ARRANGE COMPRISE PIVOT BAR SUPPORT BAR PIVOT**

**INTERCONNECT PIVOT MOUNT TRACK PIVOT BAR ADJUST COMPONENT**

**DERWENT-CLASS: Q47**

**SECONDARY-ACC-NO:**

**Non-CPI Secondary Accession Numbers: N1998-436865**

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